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Simple 2-meter Antenna

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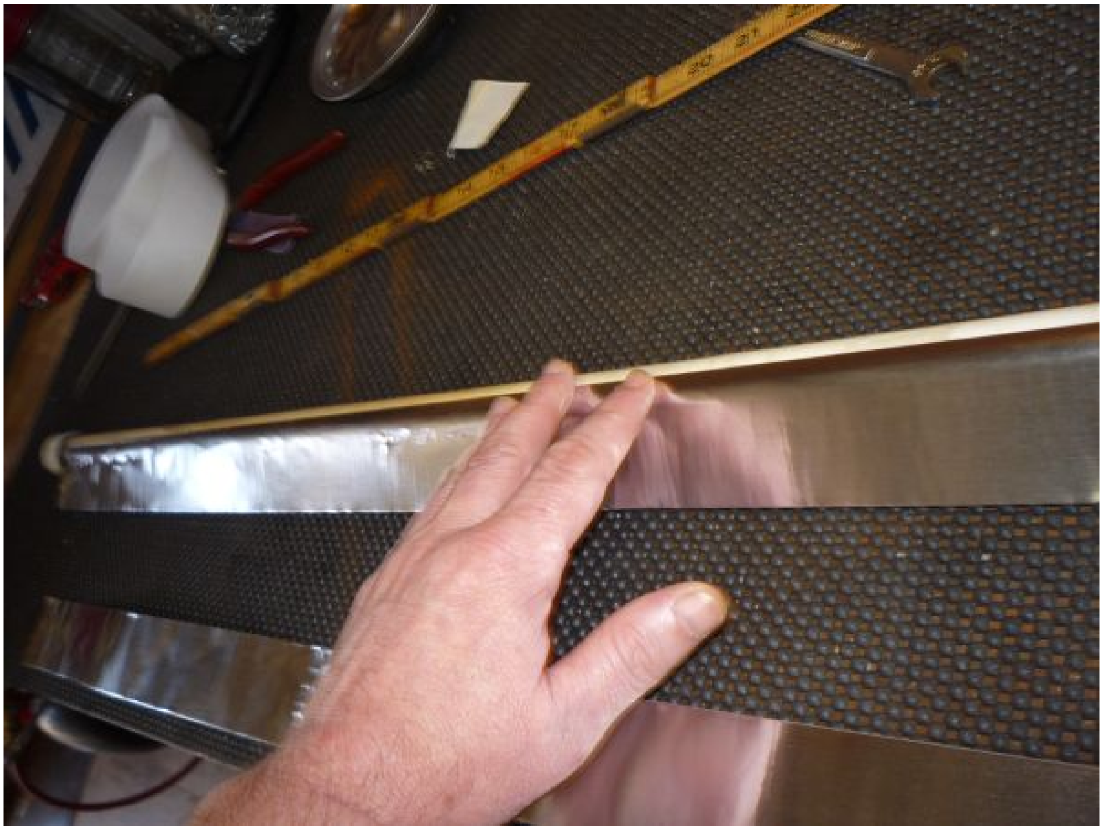
This antenna is similar in construction to the 2-meter OFC sleeve dipole I built over 8 years ago, but it is a simple center-fed dipole. I used 1″ thin-wall PVC pipe, aluminum tape, and RG-8X coax. The goal here is to put up a cheap, easy, and quick 2-meter antenna that is simple and unobtrusive, but works quite well.

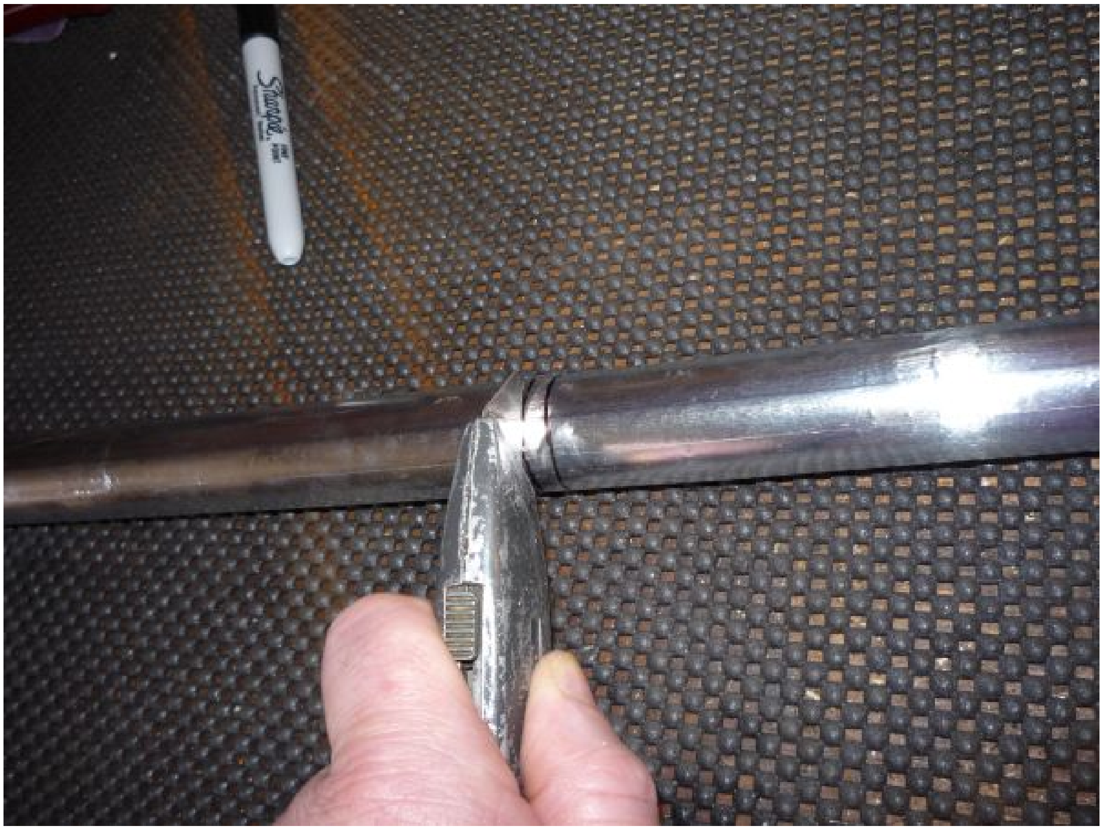
If you have the materials handy, you can build and install this antenna in a couple hours. This dipole was constructed as follows:

Cut 6 or 7 feet of 1″ thin-wall PVC.

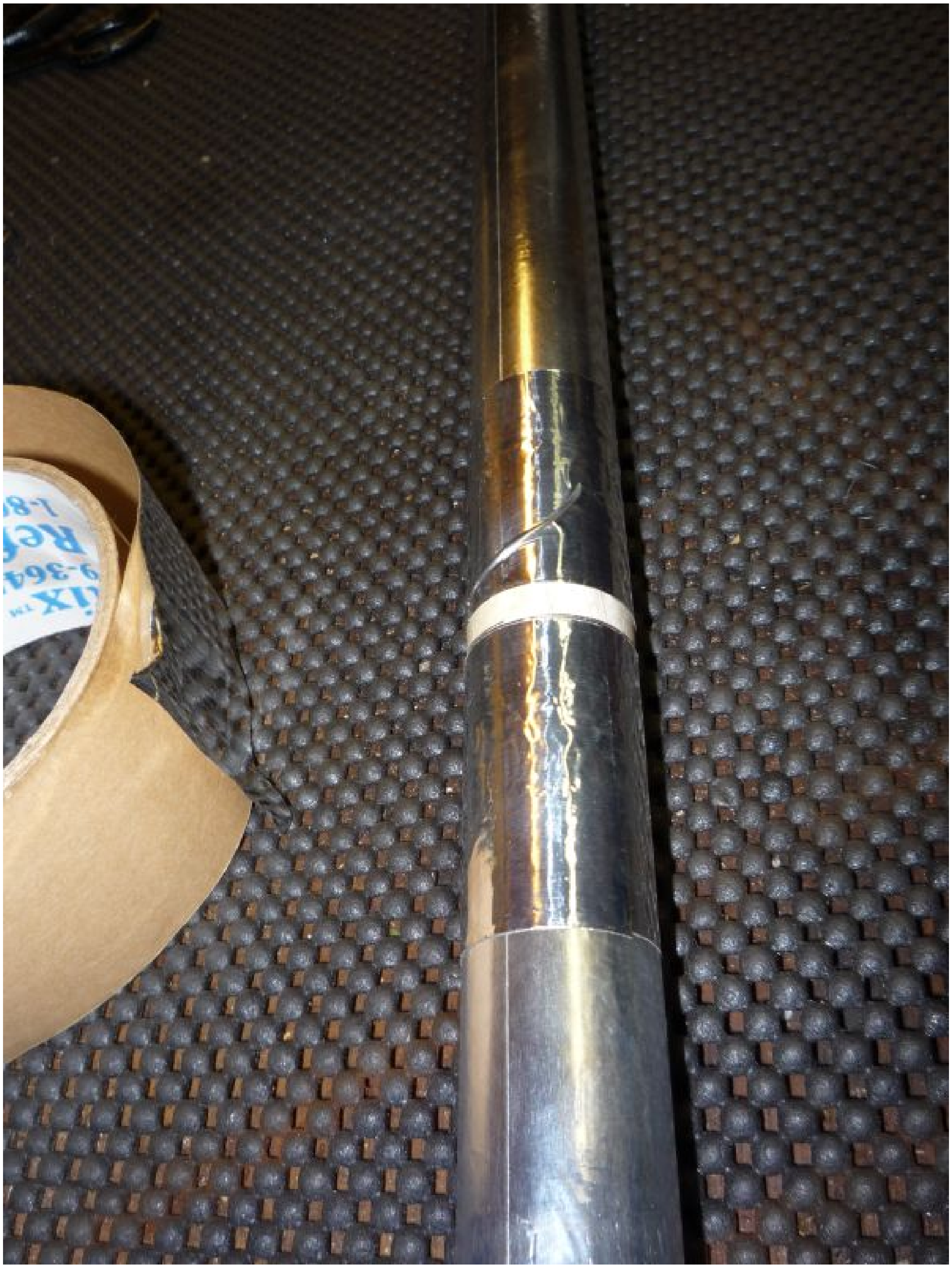
Cut two 38″ lengths of aluminum tape.



Put one edge of the first tape on the pipe, nice and straight.
Slide fingers along the tape, rotating the pipe slightly with each slide.
Try to make no wrinkles.
Apply the second tape, starting with about a 1/8th″ overlap.

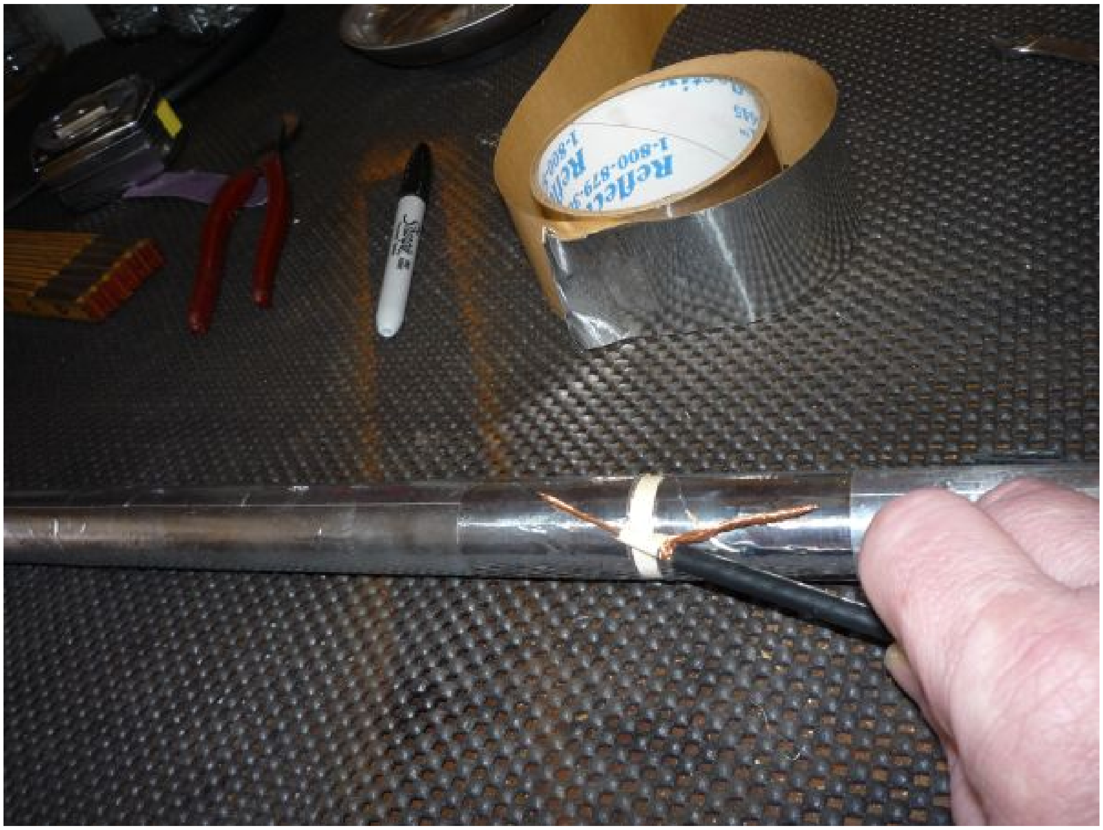


Find the exact center of the tapes and cut away ¼″.



Cut 4 pieces of aluminum tape about 5 inches long. Wrap them around the 4 ends of the two elements. The extra thickness at the feed-point will handle more power than a single layer.

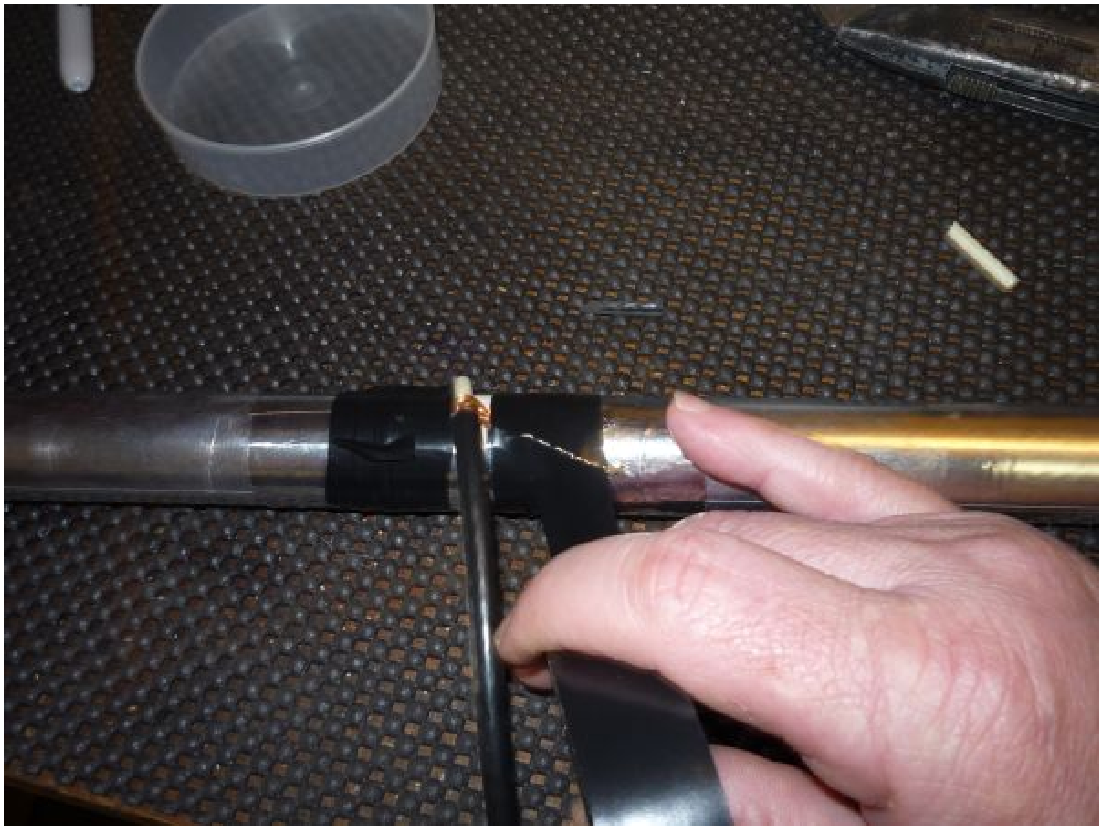
I used 16½ feet of RG-8X, which is 3 waves at 147MHz and VF .82.



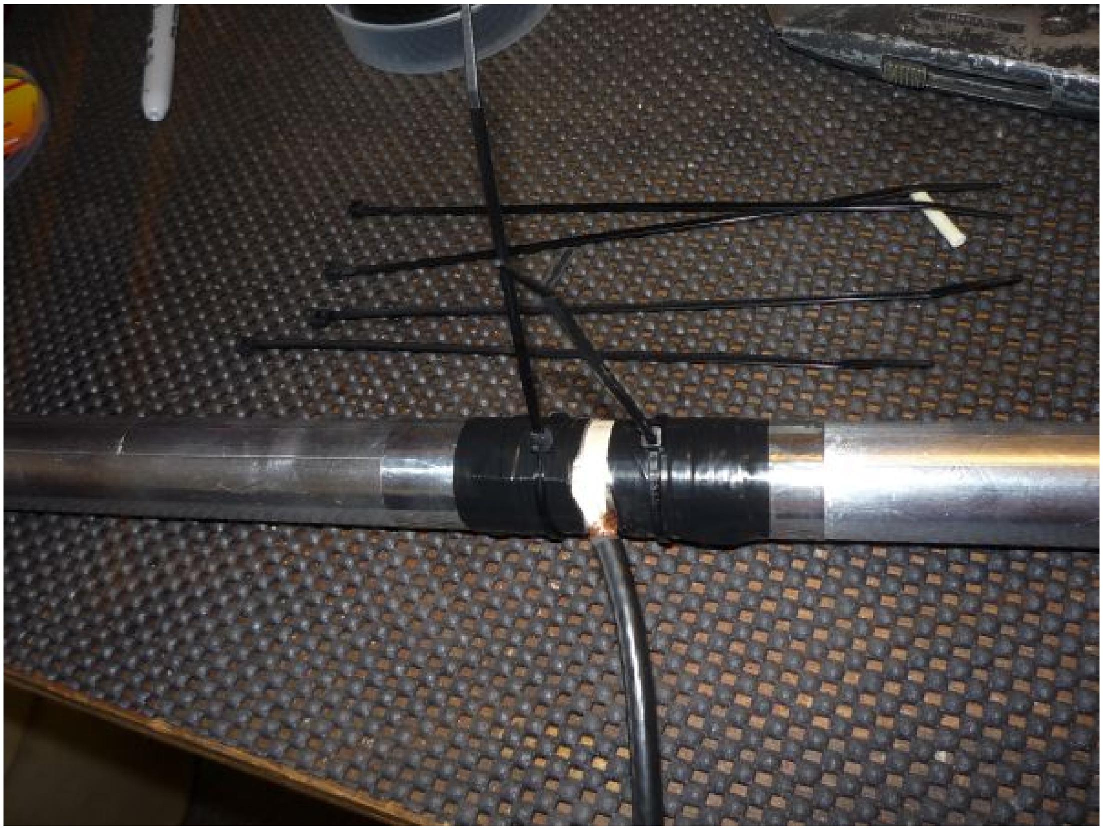
Strip out 1½ inches of the coax like this.

Dip the conductors in synthetic grease to help avoid corrosion.

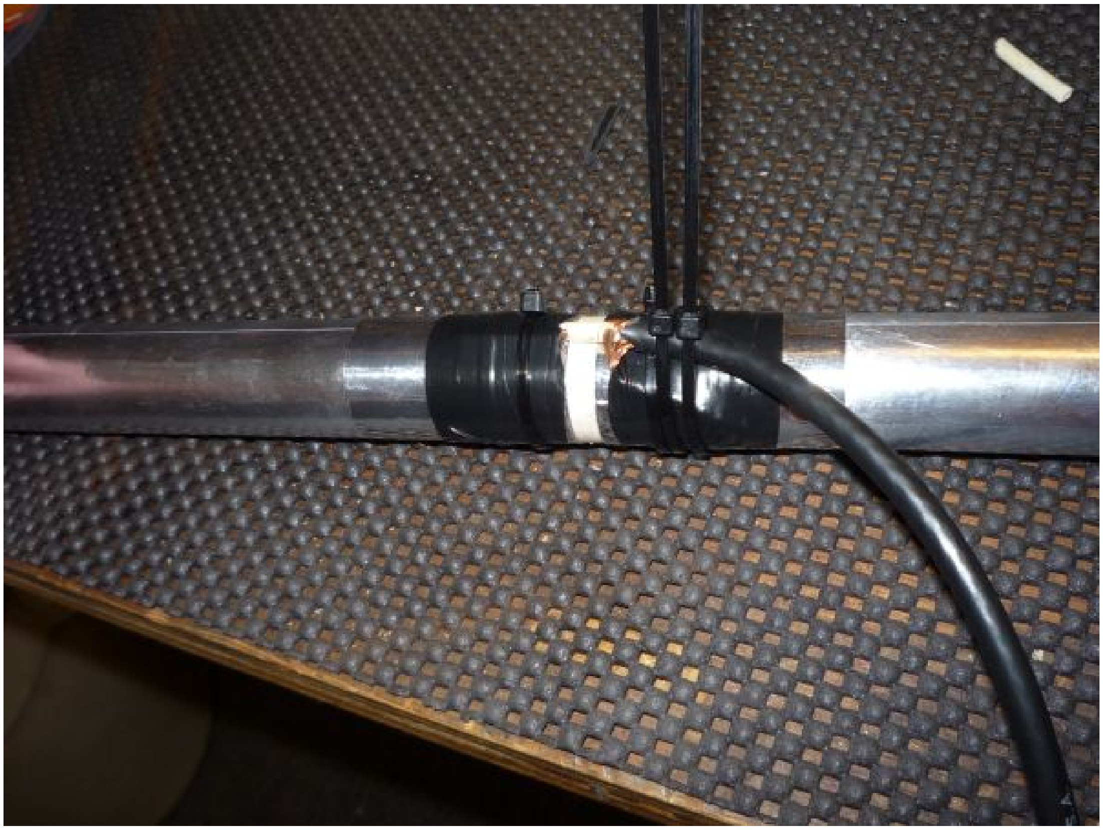
Use a high-quality tape like 33+, tightly wrap the conductors down against the pipe. Be careful to not spread grease around while taping.



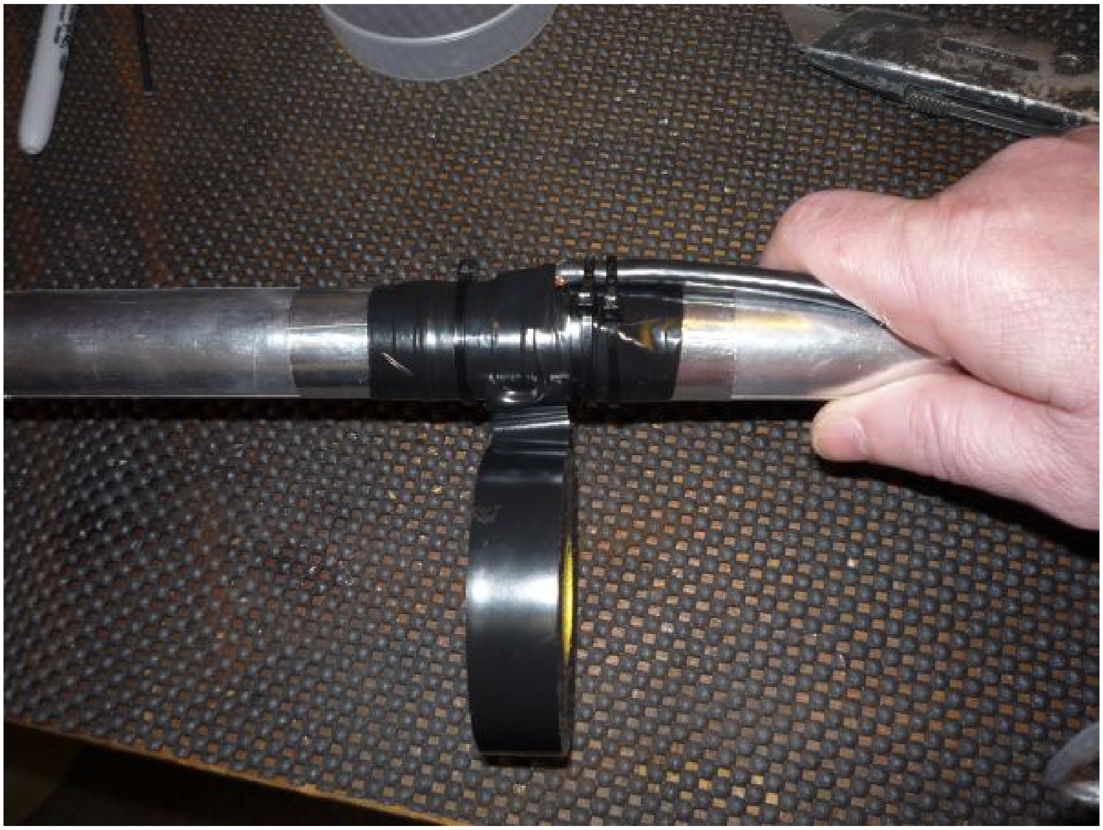
Tape down the shield, as tightly as you can stretch the tape.



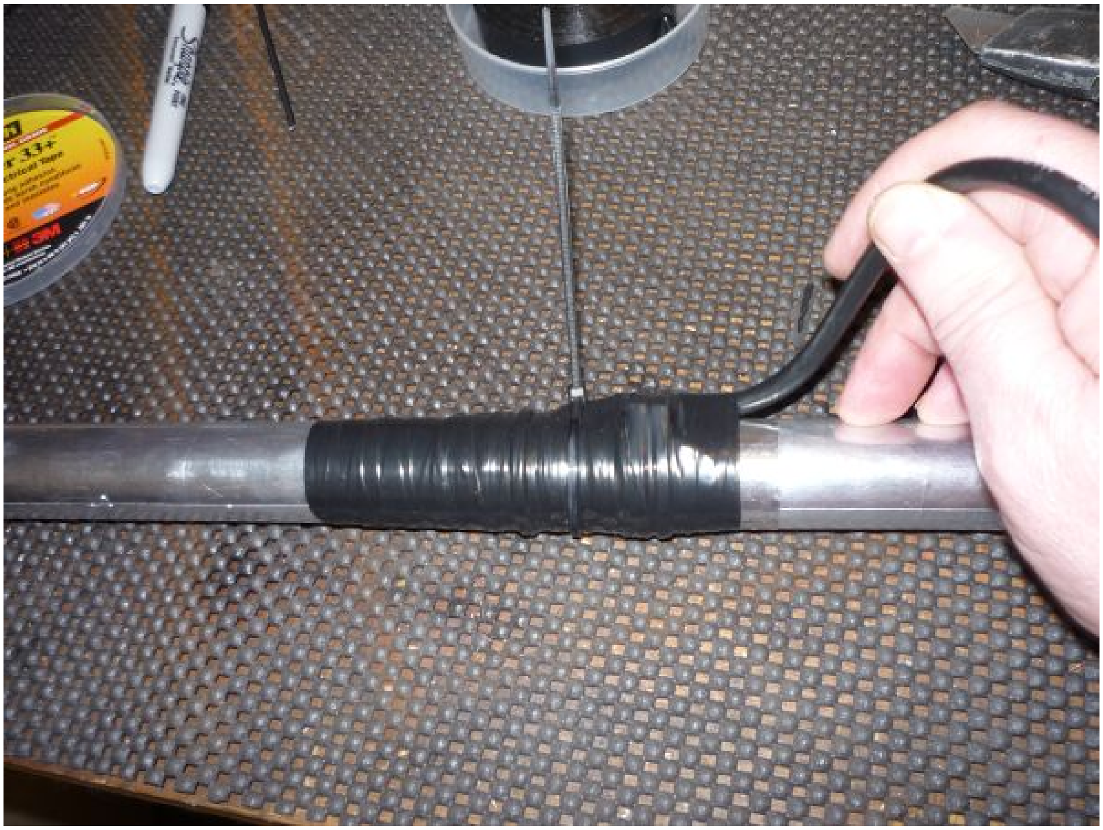
Add a couple of small ties over the taped conductors. Pull them as tight as you can without breaking them. This is to further mash the conductors into the elements.



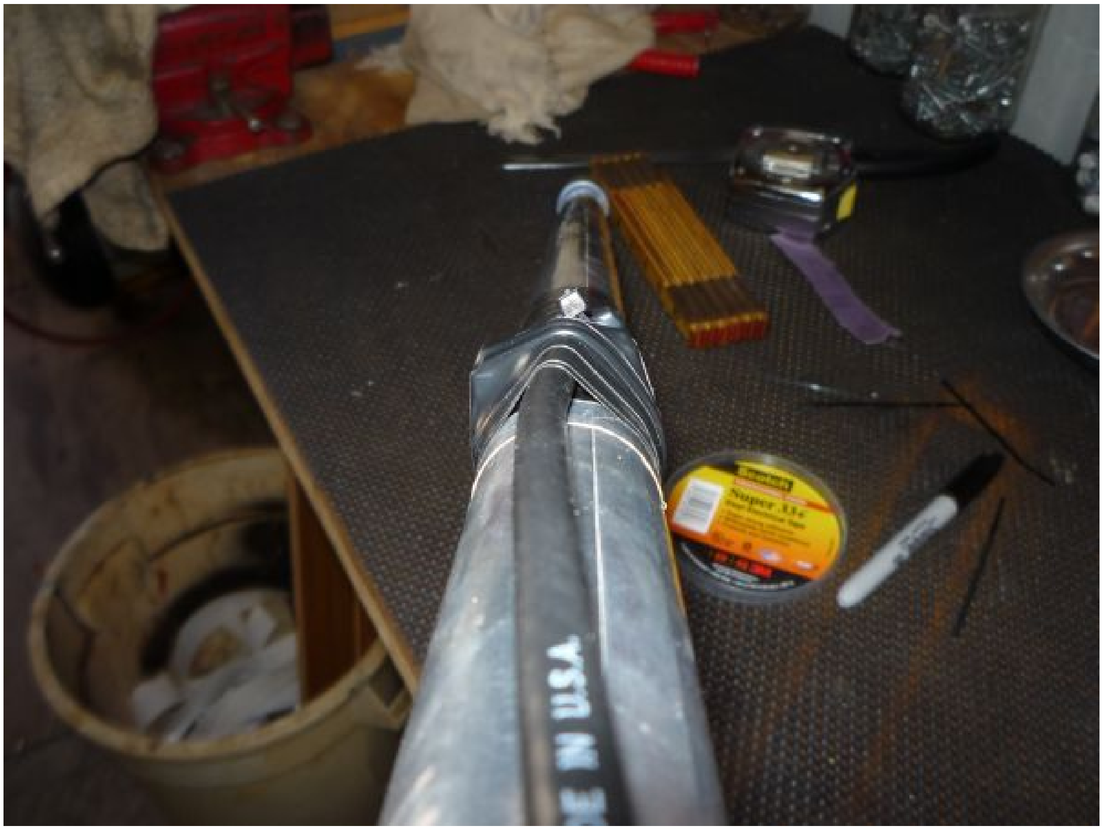
Now bring the coax down and add a couple of ties to it, as a strain-relief.



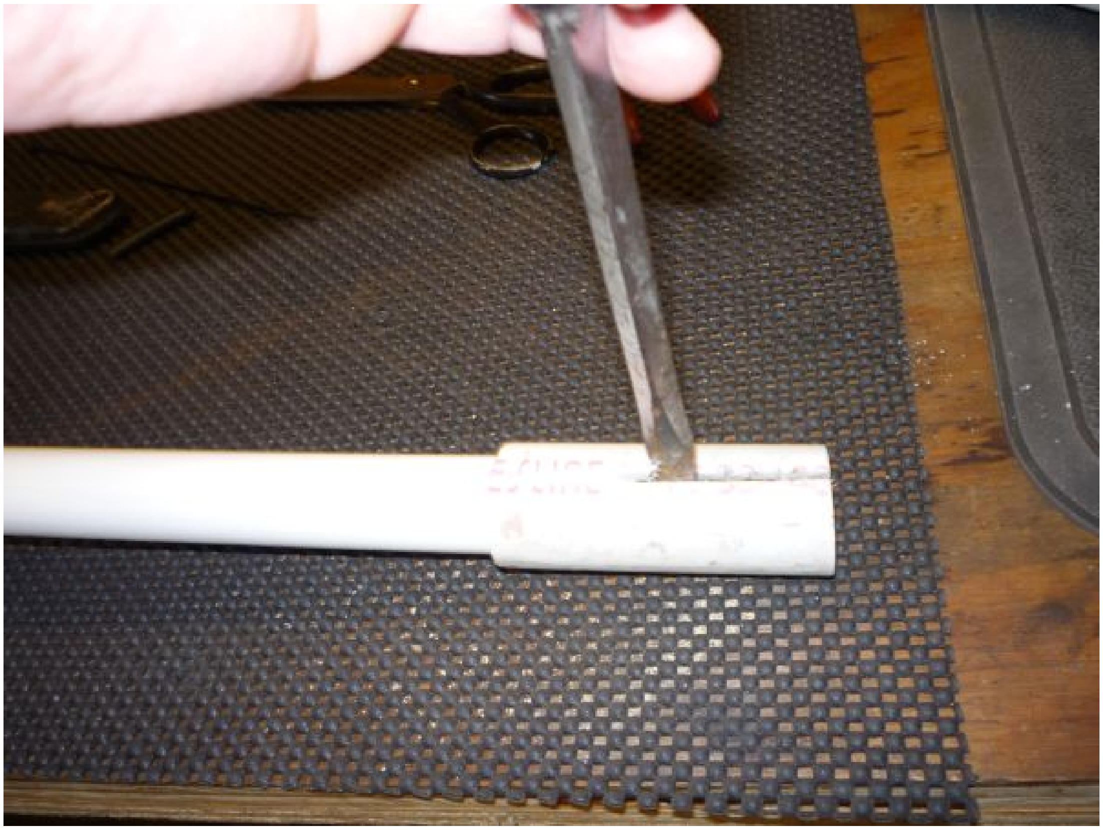
Now tape the whole connection. Start in the middle, half-lapping upwards, then work down to the bottom, then back up to the middle. Note that you can’t do this with cheap vinyl tape — you need something that will stretch and seal.



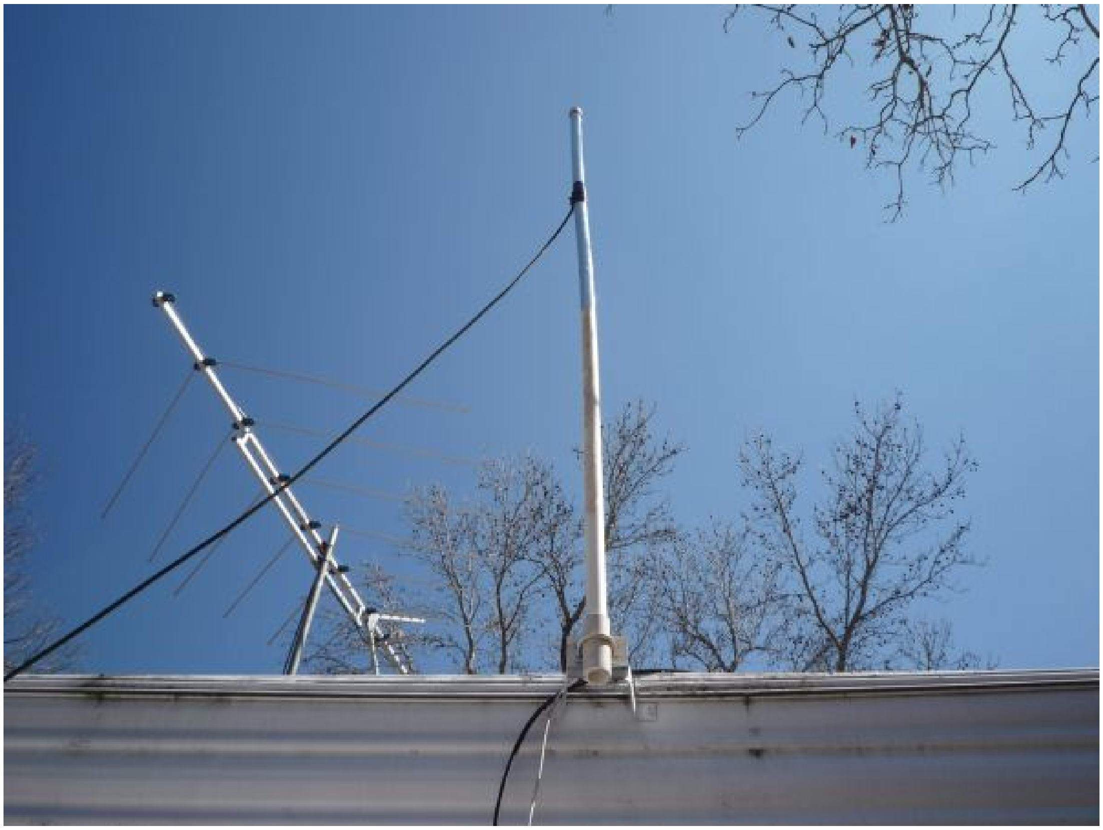
Apply a tie-wrap to the tape's tail, so it won't unravel.



Now notice that you have these two little gaps, where the coax comes out.
Dab a little silicone caulk there to keep out spiders and moisture.

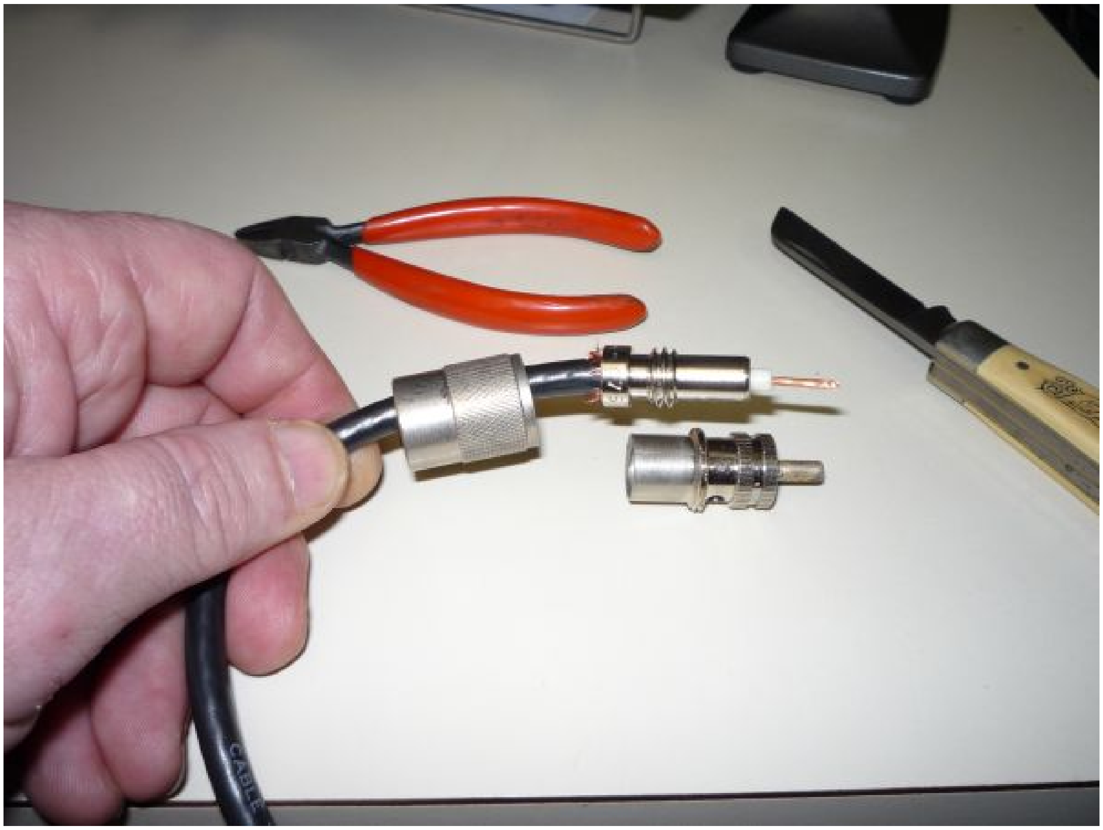


Thinwall PVC is too brittle to clamp it with a u-bolt. Cut a little piece of sch-40, slit it, spread it, and slip it over the pipe for reinforcement.



Mount it on something…

Run the coax in…



Install your favorite coax connector…

and test it!

Notes

- You can protect the elements from corrosion with paint, or better, outdoor polyurethane varnish.
- If installing near a metal roof like I did, you'll need to find the right height above the metal before the SWR will come down. In my case, I ended up with it about ½-wave above the roof, then the SWR went nearly flat across the band. With it lower, as shown above, the SWR was around 2.
- For the elements, 38 inches (total, including the gap) should give you a low SWR across the band. If it doesn't, try changing the antenna's environment before altering the antenna.
- You can also adjust the SWR somewhat by changing the dangle-angle of the coax. In my case, it ended up being best about 1" from the lower element, while bringing it out perpendicular didn't work worth a darn! That's a lucky thing, I guess, since a perpendicular feed-line would side-load the PVC.
- If you wanna put it up on a metal pole, I'd suggest leaving ½-wave (about 40") of bare PVC between the lower element and the metal pole.
- Please feel free to drop me an email if you build one and let me know how it works or how it could be better!

So there you have it—I told you it was easy!

—73, KV5R

← **NVIS Army FM 24-18** — **2-Meter Sleeve Dipole** →

15 thoughts on "Simple 2-meter Antenna"

John Pollock N8POM 6/27/17
on **June 27, 2017 at 10:32 AM** said:

Would it hurt to use breeze clamps instead of all of the zip ties?

Reply ↓

kv5r
on **July 5, 2017 at 1:35 PM** said:

Yes you can use hose clamps but it would be very hard to seal the connection with tape over the worm gear. That's why I used zip ties; easy to tape and seal.

Reply ↓

Steve
on **December 1, 2016 at 2:34 PM** said:

IS THIS CONCEIVABLE TO DO WITH ALUMINUM TUBING, SEPARATED WITH THE WHITE COUPLING FOR BLACK PLASTIC WATERPIPE?

Reply ↓

Josè Antonio mogrovejo Prieto
on **August 6, 2016 at 5:41 PM** said:

Dear colleague: excellent article, congratulations and 73 dx
[fify]

Reply ↓

L. Kirk Kridner KV5Q
on **June 14, 2016 at 6:50 PM** said:

Nice article – I am going to give it a try.
Thanks,
KV5R de KV5Q

Reply ↓

Tyler
on **April 28, 2016 at 9:46 PM** said:

i built one very similar to your specs. although instead of the coax running up the outside. i had it run through the middle of the PVC then drilled a hole just large enough for the coax to fit through in the middle of the length of the pipe. looks a bit cleaner and runs great. i have it roughly 50ft in the air near the top of my mast. i can hit everything within about 60 miles. works great! thanks for the overall idea!

Reply ↓

kv5r
on **April 29, 2016 at 3:34 AM** said:

Yes, I did the sleeve dipole before this one. See: Sleeve Dipole the feed needs to be offset a little to compensate for the interaction of the lower element with the coax shield.
73, —kv5r

Reply ↓

Jim Deaver
on **April 28, 2016 at 10:45 AM** said:

Would it work Horizontal or does it need to be vertical?

White Stone, Va.

KM4TNF

Reply ↓

kv5r
on **April 28, 2016 at 3:26 PM** said:

Well, all the repeaters and mobiles and most bases on 2-meters are vertical polarization.
Horizontal is only used (on 2m) for ssb/cw on the low end of the band, very little activity there (virtually none). You'll lose a lot of signal if you run a 2 meter antenna horizontal.
On HF it doesn't matter so much but on 2-meters it does. Stay vertical if you wanna hear repeaters and such.
73, —kv5r

Reply ↓

Andrew Spiehler
on **January 29, 2016 at 10:22 AM** said:

I take it that the adhesive on the aluminum tape has a low enough resistance as to not cause problems.

Reply ↓

kv5r
on **January 29, 2016 at 8:45 PM** said:

Correct. There's plenty of overlap for capacitive coupling. Note also that the coax wires are pressed against the metal side, not under the adhesive.

Reply ↓

Leland Look
on **August 23, 2015 at 3:57 PM** said:

great pictures and explanations!

Reply ↓

Woody Gimbel KJ4UEA
on **May 30, 2015 at 7:11 PM** said:

I like the simple 2 meter antenna and will build it in the next couple of week ends.
Thanks again,
Woody Gimbel, KJ4UEA
Oklahoma City, OK

Reply ↓

Gavin
on **April 27, 2015 at 5:35 PM** said:

Hi, I am wanting to build this antenna but don't have 16ft of coax. Can I use less? Would it affect the antennas performance? Thanks, KE0AGO

Reply ↓

KV5R
on **April 27, 2015 at 6:23 PM** said:

No, as long as the SWR at the feedpoint is pretty low, the length of the coax shouldn't matter. But you do need enough to come away perpendicular for at least a half-wave, then come down to the radio.

Reply ↓

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